

CLAIMS

What is claimed is:

- 1 1. A method, comprising:
2 collecting information pertaining to service capabilities supported by each of a
3 plurality of service processors used to service server management requests for a
4 server, the services supported by each service processor performed via execution of
5 service code associated with that service processor;
6 aggregating the service capabilities into a aggregated set of service
7 capabilities; and
8 providing a unified presentation of service capabilities corresponding to the
9 aggregated set of service capabilities to a service consumer.
- 1 2. The method of claim 1, further comprising:
2 collecting the information pertaining to and aggregating the service
3 capabilities supported by the plurality of service processors during a pre-boot phase
4 for the server; and
5 providing the unified presentation of service capabilities to an end-user via
6 one of a text-based or graphical user interface.
- 1 3. The method of claim 2, wherein the unified presentation of service capabilities
2 are provided to the end-user during the pre-boot phase.
- 1 4. The method of claim 2, wherein the unified presentation of service capabilities
2 are provided to the end-user during an operating system runtime phase for the
3 server.

1 5. The method of claim 1, wherein the server includes at least one add-in
2 service processor hosted by an add-in card that installed in the server.

1 6. The method of claim 5, further comprising:
2 collecting additional information pertaining to service capabilities of an add-in
3 service processor and associated service code hosted by a hot-swap card that is
4 added to the server while the server is running; and
5 updating the unified presentation of service capabilities provided to the
6 service consumer to reflect any additional services supported by the added add-in
7 service processor.

1 7. The method of claim 5, further comprising:
2 detecting that a hot-swap card hosting at least one add-in service processor
3 and associated service code has been removed from the server while the server is
4 running; and
5 updating the unified presentation of service capabilities provided to the
6 service consumer to reflect a removal of services offered by the at least one add-in
7 service processor hosted by the hot-swap card that are not offered by any remaining
8 service processor.

1 8. The method of claim 1, wherein the unified presentation of service capabilities
2 is presented to the service consumer via a BIOS-based application program
3 interface (API).

1 9. The method of claim 8, wherein the service consumer is a programmatic
2 entity that accesses services via the BIOS-based API.

1 10. The method of claim 1, wherein the operation of collecting the information
2 pertaining to service capabilities supported by each of a plurality of service
3 processors comprises:

4 loading firmware drivers for each of the service processors;
5 enumerating services provided by each service processor via the firmware
6 driver for the service processor; and
7 publishing the services that are enumerated to a BIOS unified presentation
8 table.

1 11. The method of claim 10, wherein the operations are performed by firmware
2 components configured in accordance with the extensible firmware interface (EFI)
3 standard.

1 12. The method of claim 1, further comprising:
2 enabling an end-user to set preferences for like services offered by more than
3 one service processor; and
4 in response to a service request;
5 performing a corresponding service using a service processor with the
6 highest preference from among the more than one service processor.

1 13. The method of claim 12, wherein the end-user is enabled to set preferences
2 via an interface that is presented to the end-user during a pre-boot phase for the
3 server.

1 14. The method of claim 12, wherein the end-user is enabled to set preferences
2 via an interface that is presented to the end-user during an operation system runtime
3 phase for the server.

1 15. An article of manufacture, comprising:
2 a machine-readable medium that provides instructions that, if executed
3 by a processor in a server, will cause the server to perform operations
4 including,
5 aggregating service capabilities supported by each of a plurality
6 of service processors used to service server management requests for
7 the server via execution of associated service code; and
8 providing a unified presentation of service capabilities
9 corresponding to the aggregated set of service capabilities to a service
10 consumer.

1 16. The article of manufacture of claim 15, wherein the article comprises a non-
2 volatile storage device.

1 17. The article of manufacture of claim 15, wherein the instructions comprise a
2 portion of the BIOS (basic input/output system) code for the server.

1 18. The article of manufacture of claim 15, wherein execution of the instructions
2 further performs operations including:
3 loading firmware drivers for each of the service processors, each firmware
4 driver to enumerate services supported via execution of service code by the service
5 processor to which the firmware driver corresponds; and

6 publishing the services that are enumerated to a BIOS unified presentation
7 (BUP) table.

1 19. The article of manufacture of claim 18, wherein execution of the instructions
2 performs the further operation of publishing an application program interface via
3 which a software entity running on the server during an operating system runtime
4 phase for the server is enabled to access data in the BUP table.

1 20. The article of manufacture of claim 15, wherein the instructions comprise
2 firmware instructions corresponding to firmware components configured in
3 accordance with the extensible firmware interface (EFI) standard.

1 21. The article of manufacture of claim 15, wherein the server supports runtime
2 installation of hot-swap cards that host at least one add-in service processor and
3 associated service code, and wherein execution of the instructions performs further
4 operations, including:

5 collecting information pertaining to service capabilities for at least one add-in
6 service processor hosted by a hot-swap card that is added to the server while the
7 server is running; and

8 updating the unified presentation of service capabilities provided to the
9 service consumer to reflect any additional services supported by the at least one
10 service processor hosted by the hot-swap card that is added.

1 22. The article of manufacture of claim 15, wherein the server supports runtime
2 removal of hot-swap cards that host at least one add-in service processor, and
3 wherein execution of the instructions performs further operations, including:

4 detecting that a hot-swap card hosting at least one add-in service processor
5 has been removed from the server while the server is running; and
6 updating the unified presentation of service capabilities provided to the
7 service consumer to reflect a removal of services offered by the at least one add-in
8 service processor hosted by the hot-swap card that are not offered by any remaining
9 service processor.

1 23. The article of manufacture of claim 15, wherein execution of the instructions
2 further performs operations including:
3 enabling an end-user to set preferences for like services offered by more than
4 one service processor; and
5 in response to a service request;
6 performing a corresponding service using a service processor with the
7 highest preference from among the more than one service processors.

1 24. A server, comprising:
2 a main processor;
3 a non-volatile storage device in which BIOS instructions are stored,
4 communicatively-coupled to the main processor;
5 at least one service processor, communicatively-coupled to the main
6 processor; and
7 for each of the at least one service processor,
8 a non-volatile storage device in which firmware is stored, the firmware to be
9 executed by the corresponding service processor to perform server management
10 services,
11 wherein the BIOS instructions, when executed by the main processor,
12 perform operations including:

13 aggregating service capabilities supported by each of the at least one
14 service processor via execution of firmware corresponding to that service
15 processor; and
16 providing a unified presentation of service capabilities corresponding to
17 the aggregated set of service capabilities to a service consumer.

1 25. The server of claim 24, further comprising:
2 a management bus, to communicatively-couple an add-in service processor
3 hosted by a hot-swap add-in card to the main processor,
4 and wherein execution of the instructions performs further operations,
5 including,
6 collecting information pertaining to service capabilities for at least one add-in
7 service processor hosted by a hot-swap card that is added to the server while the
8 server is running; and
9 updating the unified presentation of service capabilities provided to the
10 service consumer to reflect any additional services supported by the at least one
11 service processor hosted by the hot-swap card that is added.

1 26. The server of claim 25, wherein execution of the instructions performs further
2 operations including:
3 detecting that a hot-swap card hosting at least one add-in service processor
4 has been removed from the server while the server is running; and
5 updating the unified presentation of service capabilities provided to the
6 service consumer to reflect a removal of services offered by the at least one add-in
7 service processor hosted by the hot-swap card that are not offered by any remaining
8 service processor.

1 27. The server of claim 24, wherein the at least one service processor comprises
2 a baseboard management controller.

1 28. The server of claim 24, wherein execution of the instructions performs further
2 operations including:

3 loading firmware drivers for each of the at least one service processors, each
4 firmware driver to enumerate services provided by the service processor to which it
5 corresponds; and

6 publishing the services that are enumerated to a BIOS unified presentation
7 table.

1 29. The server of claim 24, wherein execution of the instructions performs further
2 the operation of publishing an application program interface via which a software
3 entity running on the server during an operating system runtime phase for the server
4 is enabled to access data in the BUP table.

1 30. The server of claim 24, wherein execution of the instructions performs further
2 operations including:

3 enabling an end-user to set preferences for like services offered by more than
4 one service processor; and

5 in response to a service request;

6 performing a corresponding service using a service processor with the
7 highest preference from among the more than one service processors.